

Hospital use by Olympic athletes during the 1996 Atlanta Olympic Games

Mark E Keim and Dianne Williams

AMPCo

Australasian Medical Publishing Company Limited, ACN 000 005 854, Level 1, 76 Berry Street, North Sydney, New South Wales 2060, Australia.
Telephone: (02) 9954 8666 • International +612 9954 8666 • Facsimile (02) 9956 7644 • E-mail ampco@magna.com.au

Reprinted from the Medical Journal of Australia • Copyright: Australasian Medical Publishing Company Limited

Hospital use by Olympic athletes during the 1996 Atlanta Olympic Games

Mark E Keim and Dianne Williams

Only 43 athletes presented to the hospital at the Atlanta Olympics; their conditions fell within the range routinely seen in modern hospitals.



The Centennial Anniversary Olympic Games in Atlanta, Georgia, in the summer of 1996 was the largest gathering of athletes for any event in history. Over 10 000 athletes from 197 countries converged on Atlanta. Support services, including medical care, were provided by the Atlanta Committee for the Olympic Games (ACOG).

Primary medical and dental care was provided by the Polyclinic in the Olympic Village (a closed compound on the campus of the Georgia Institute of Technology) (see Eaton et al., page 599). Medical evaluation or treatment beyond the scope of non-emergency outpatient care was referred to a nearby hospital, Crawford Long Hospital of Emory University. This 600-bed hospital is located within five blocks of the Olympic Village and within three kilometres of the Olympic Stadium. It was selected by ACOG as exclusive provider of outpatient emergency medical services and hospitalisation for athletes. ACOG also made agreements with local ambulance providers for emergency medical services and transport of athletes to the hospital.

Crawford Long Hospital sought advance information on athletes' medical needs at the Olympics, but little has been published on this topic. Only recently have articles on public health and spectator medical care at the Los Angeles, Calgary and Barcelona Games been published.¹⁻⁴ To our knowledge, no reports have focused on the specific medical needs of athletes at the Olympics. Therefore, we conducted a retrospective review of the hospital records of all Olympic athletes presenting to hospital in the period around the 1996 Atlanta Olympics (July 14 to August 7, 1996).

1: Athletes presenting to hospital, by Olympic event

Event	Sport-related injury	Other or unknown
Boxing	5	0
Track	3	2
Wrestling	5	0
Basketball	3	0
Cycling	2	1
Judo	1	2
Diving	1	1
Gymnastics	1	1
High jump	1	1
Marathon	2	0
Weightlifting	2	0
Baseball	0	1
Field hockey	1	0
Handball	1	0
Kayaking	0	1
Long jump	1	0
Soccer	1	0
Table tennis	0	1
Volleyball	1	0
Yachting	0	1
Total	31	12

Hospital preparation

Armed security was provided for athletes by the hospital security force, which comprises fully deputised public law enforcement officers with full jurisdiction to arrest and detain suspected law violators. The watch around the hospital perimeter and on all hospital property was increased. In the Emergency Department, athletes were evaluated in private rooms with an armed sentry outside the door at all times. During hospitalisation, athletes were housed on a single floor with access restricted by armed security. The placement of sentries in the outpatient diagnostic centre during athlete outpatient visits was not documented.

The hospital organised interpreting services with a language translation telephone service provided by IBM, as well as with local multilingual volunteers.

Presentations

Forty-three Olympic athletes presented to the hospital between 14 July and 7 August 1996; 31 of these presented to the Emergency Department (about 0.31% of all Olympic athletes), with 14 subsequently admitted to hospital. Another eight were admitted after direct referral by team or Polyclinic doctors, and four were referred for outpatient diagnostic services — bone radioscintigraphy, computed tomography, and magnetic resonance imaging. Numbers of presentations per day ranged from zero to six, peaking on 24 July.

No athletes presented after the bombing of the Centennial Olympic Park on 27 July, which killed two people and injured 111. Further, Crawford Long Hospital received few victims despite its proximity to the Park, due in part to a community triage system designed to keep facilities in reserve in case of a secondary attack on athletes.

The presenting athletes comprised 16 women (37%) and 27 men (63%), with age range 16–36 years (mean, 24.7 years). Hospital presentations according to competitive event are shown in Box 1; the highest numbers were for participants in boxing, wrestling and track events (five each). The most frequent countries of origin were Australia (four) and Russia, South Africa and South Korea (three each). Fifteen patients (35%) required interpreters.

Division of Emergency Medicine, Emory University School of Medicine, Atlanta, Georgia, USA.

Mark E Keim, MD, Disaster Medicine Fellow.

Crawford Long Hospital of Emory University, Atlanta, Georgia, USA.

Dianne Williams, RN, MSN, Emergency Department Director of Nursing.

Reprints: Mark E Keim, MD, Division of Emergency Medicine, 69 Butler Street, SE, Atlanta, GA 30303, USA.

E-mail: mkeim@emory.edu

Twenty-two athletes arrived by ambulance. Venues most often needing ambulance transport were boxing (four athletes), track-and-field and cycling (three each), and judo (two). Twenty-two athletes underwent some degree of formal medical evaluation before arriving at Crawford Long Hospital; three of these were evaluated in hospital emergency departments closer to the venue where the injuries occurred, but were then transferred by ambulance to Crawford Long Hospital. No extra security was arranged for this transfer.

Most complaints (30; 70%) were described as caused by a sport-associated injury. For 20, the injury occurred during competition and, for seven, during training (time of others was unknown). Ten cases were associated with exacerbation of pre-existing illness or injury, most commonly degenerative disc disease (four), followed by patellar tendinitis and jaw fracture (two each). However, 24 athletes denied any significant past medical history.

Investigations

Most diagnostic work-ups in the Emergency Department and in hospital were routine. Laboratory studies included 22 complete blood counts, 17 urinalyses, 27 biochemical profiles, microscopy of one malaria smear, and serological tests for dengue fever virus and ehrlichiae. Other investigations included 29 radiographs, six computed tomography (CT) scans of the head, one magnetic resonance imaging (MRI) study of the knee, one bone radioscintigraphy (BRS) study of the leg, three electrocardiograms, one echocardiogram, one pelvic ultrasound examination, and one radionuclide heart scan.

In addition, outpatient radiological studies were provided for four athletes: CT scan of the spine for one athlete with back pain (showing no abnormalities), MRI of the ankle for another (showing a tarso-navicular fracture), and BRS of the leg for two (showing stress fractures of the femur and tibia, respectively).

Course in the Emergency Department

Primary diagnoses of the 31 athletes who presented to the Emergency Department are shown in Box 2. Most conditions were trauma-related (23; 74%); none were con-

2: Primary diagnoses for 31 athletes on presentation to the Olympic Emergency Department (number admitted in parentheses)

Concussion	4 (3)
Ankle sprain	3 (3)
Cervical muscle strain	2 (2)
Degenerative disc disease	2 (1)
Achilles tendon rupture	2 (1)
Abdominal pain	1 (0)
Allergic reaction to insect bite	1 (0)
Appendicitis	1 (1)
Back pain	1 (0)
Cellulitis	1 (1)
Hip contusion	1 (1)
Chest contusion	1 (0)
Dengue fever	1 (1)
Dislocated thumb	1 (0)
Ethanol intoxication	1 (0)
Radius fracture	1 (1)
Mandible fracture	1 (1)
Nasal fracture	1 (0)
Thumb fracture	1 (0)
Muscle strain	1 (0)
New-onset atrial fibrillation	1 (1)
Prerenal azotaemia	1 (1)
Patellar tendon rupture	1 (1)
Total	31 (14)

3: Diagnoses on discharge for 22 Olympic athletes admitted to hospital

Sports injuries	
Herniated cervical nucleus pulposus	
Cervical strain	
(two cases, one with hip contusion)	
Concussion (two cases, one with syncope)	
Recurrent shoulder dislocation	
Radius fracture	
Mandible fracture	
Nasal fracture	
Lateral meniscus tear	
Medial meniscus tear with sprain of anterior cruciate ligament	
Medial collateral ligament tear	
Achilles tendon rupture	
Patellar tendon rupture (three cases)	
Other conditions	
Altered mental status with hyponatraemia	
New-onset atrial fibrillation with "athlete heart" syndrome	
Appendicitis	
Malaria with thrombocytopenia*	
Thigh abscess	
Volume depletion with prerenal azotaemia	

*Admitted with provisional diagnosis of dengue fever.

sidered life-threatening. The most common primary diagnosis was concussion (four). Sixteen (52%) were discharged home, while one left without being evaluated after having been referred for an orthopaedic brace. (The athlete did not require medical evaluation but requested only the brace. Hospital policy required evaluation by a physician before goods or medications could be dispensed.)

Course during hospitalisation

Diagnoses on discharge for the 22 athletes admitted to hospital are shown in Box 3. These athletes spent a total of 37 days at Crawford Long Hospital. Two had same-day surgery (knee arthroscopies) without an overnight stay, and 14 had one-day stays. The longest stay was five days (one patient with malaria with thrombocytopenia, and another with a radius fracture requiring open reduction and internal fixation).

There were no complications during hospitalisation. Apart from one appendectomy, all surgical procedures were orthopaedic (including knee arthroscopy, open reduction and internal fixation of radius, subtotal meniscectomy, three tendon repairs [two patellar and one Achilles], and a closed-reduction of the mandible with wiring). Only one athlete required overnight cardiac monitoring, and none required critical-care facilities.

All but one of the hospitalised athletes were discharged home. The exception, who was admitted with fever and a thigh abscess, checked out of the hospital against medical advice after a one-day stay.

Planning for future Games

The medical and surgical needs of athletes at the Atlanta Olympics fell within the range encountered routinely in modern hospitals. The secondary care of athlete patients required no extraordinary equipment or facilities. However, the situation generated some special needs which warrant consideration by future planners of medical care for Olympic athletes. These include the need for:

- A comprehensive memorandum of agreement with ambulance services to allow for a catchment area that includes

- all athlete activities, including leisure activities, throughout their stay;
- A continuous chain of security that includes prehospital transport, outpatient studies, emergency department and inpatient hospitalisations;
- An easily accessible language translation service;
- Ready availability of hospital-based clinicians, including emergency medicine specialists, orthopaedic surgeons, internists (general physicians), radiologists, neurosurgeons, oral surgeons, cardiologists, general surgeons, and anesthesiologists;
- A small outpatient dispensary as a back-up to provide athletes with medical equipment and supplies not readily available at primary medical facilities; and

- A hospital emergency contingency plan that includes response to an attack against athletes and is coordinated with the community response.

References

1. Baker WM, Simone BM, Niemann JT, Daly A. Special event medical care: the 1984 Los Angeles summer Olympics experience. *Ann Emerg Med* 1986; 15: 185-190.
2. Steinbecker RS, Steinberg JP, Schwartz B, et al. Evaluation of travelers returning from the 1992 Olympics in Barcelona, Spain: did they acquire resistant pneumococci and meningococci? *Clin Inf Dis* 1995; 220: 731-732.
3. Thompson JM, Savoia G, Powell G, et al. Level of medical care required for mass gatherings: the XV winter Olympic Games in Calgary, Canada. *Ann Emerg Med* 1991; 20: 385-390.
4. Weiss BP, Mascola L, Farnin SL. Public health and the 1984 summer Olympics: The Los Angeles County experience. *Amer J Pub Hlth* 1988; 78: 686-688.

(Received 8 Jul, accepted 26 Sep, 1997)

□

AMPCo

Australasian Medical Publishing Company Limited, ACN 000 005 854, Level 1, 76 Berry Street, North Sydney, New South Wales 2060, Australia.
Telephone: (02) 9954 8666 • International +612 9954 8666 • Facsimile (02) 9956 7644 • E-mail ampco@magna.com.au

Reprinted from the Medical Journal of Australia • Copyright: Australasian Medical Publishing Company Limited